

Report

MBus Decoder Task

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(18.02.2021)**

Steps followed in analysing and solving the task

Step 1:

The 1st two bytes of the array is encoded with manufacturer name, lets understand the encoding consider the given example **DME**.



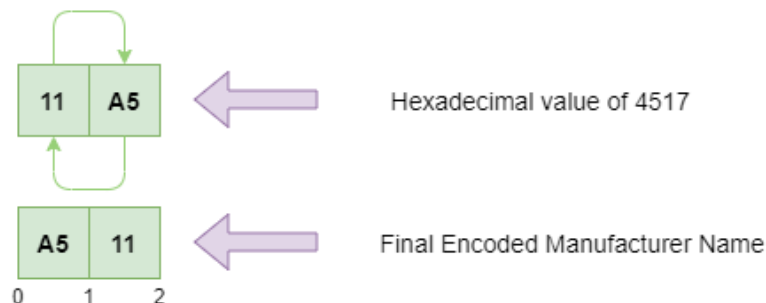
The manufacturer name is coded using the following formula:

$$\begin{aligned}\text{Manufacturer} &= [\text{ASCII}(\text{1st letter}) - 64] \cdot 32 \cdot 32 \\ &+ [\text{ASCII}(\text{2nd letter}) - 64] \cdot 32 \\ &+ [\text{ASCII}(\text{3rd letter}) - 64]\end{aligned}$$

For the Given example the value will be:

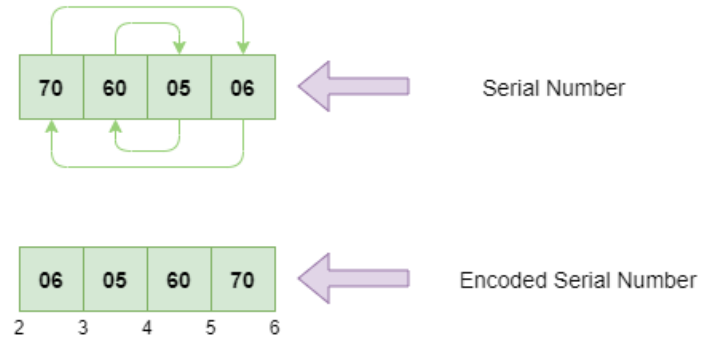
$$\begin{aligned}\text{Manufacturer} &= [68 - 64] \cdot 32 \cdot 32 \\ &+ [77 - 64] \cdot 32 \\ &+ [69 - 64] \\ &= \underline{4517}\end{aligned}$$

The Hexadecimal equivalent of above-obtained value will be.



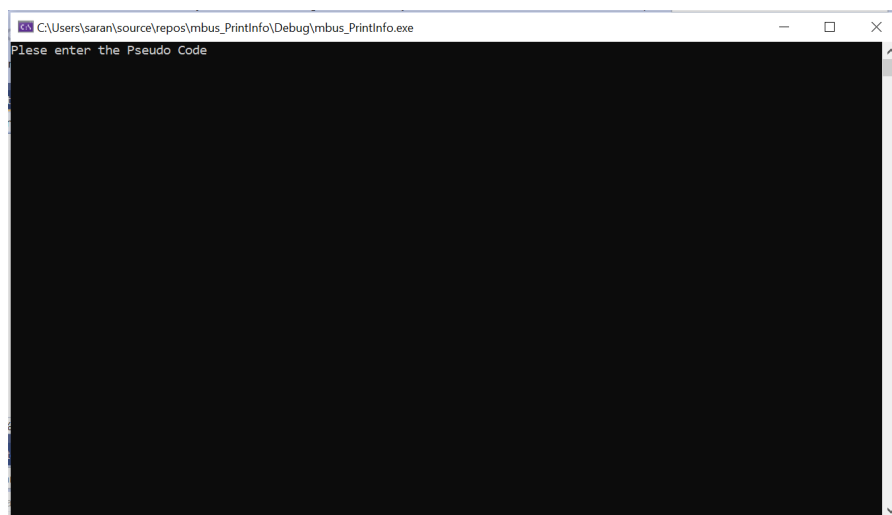
Step 2:

The last 4 bytes of the array i.e. 2nd byte to 5th byte consists of the Serial Number. Let's understand the encoding as per the given example i.e **70600506**.

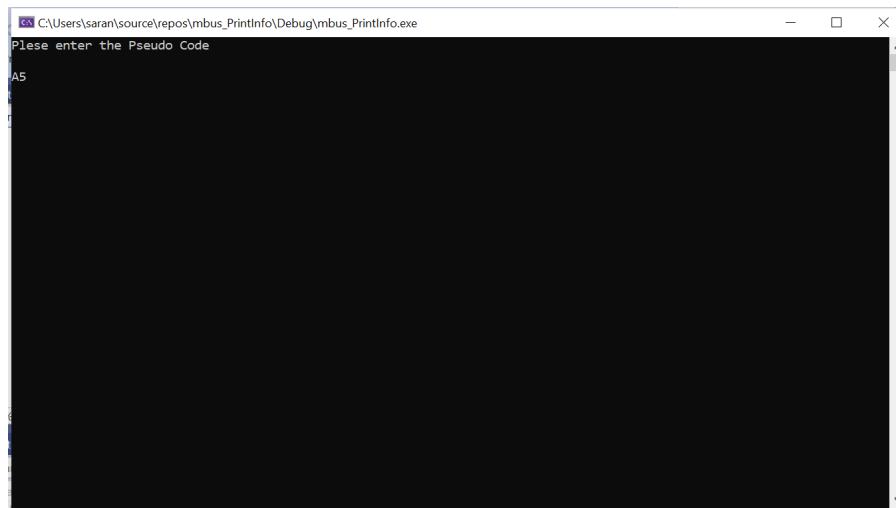


Description of how the source code was tested.

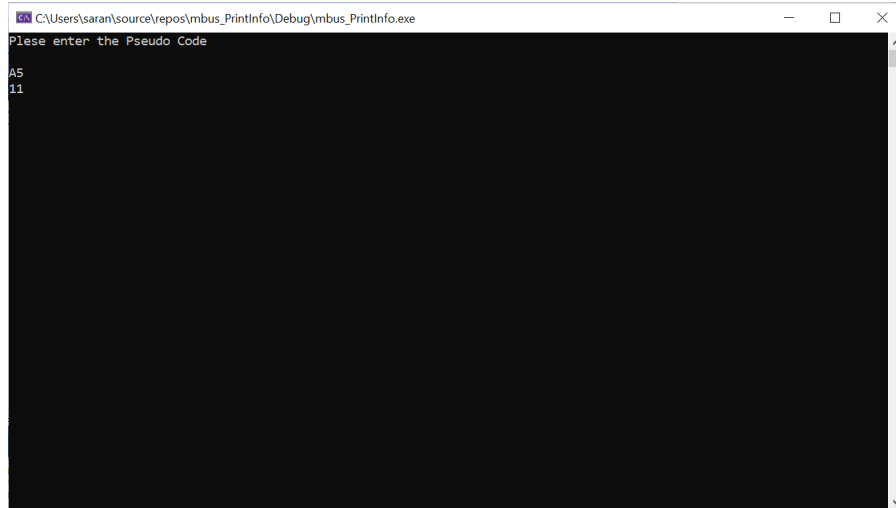
- 1) The user will be prompted to give the input



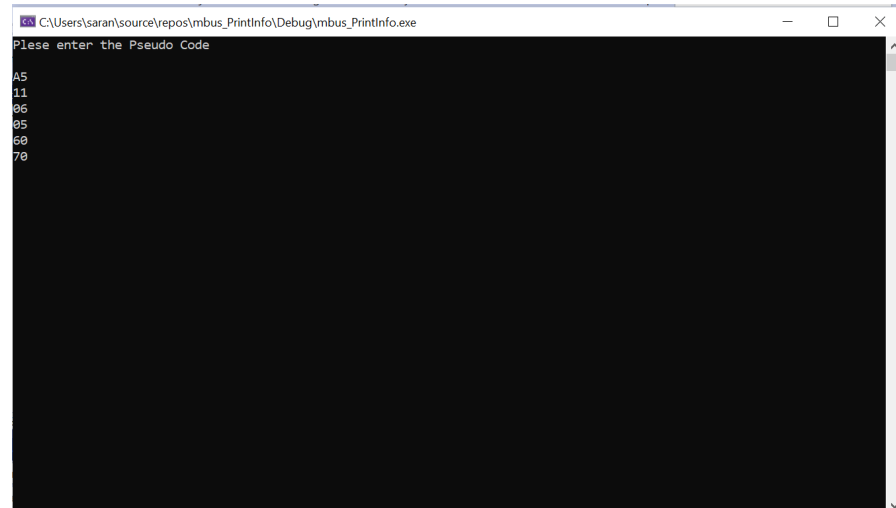
2) Press enter after giving values of each array element as shown below:



```
C:\Users\saran\source\repos\mbus_PrintInfo\Debug\mbus_PrintInfo.exe
Please enter the Pseudo Code
A5
```

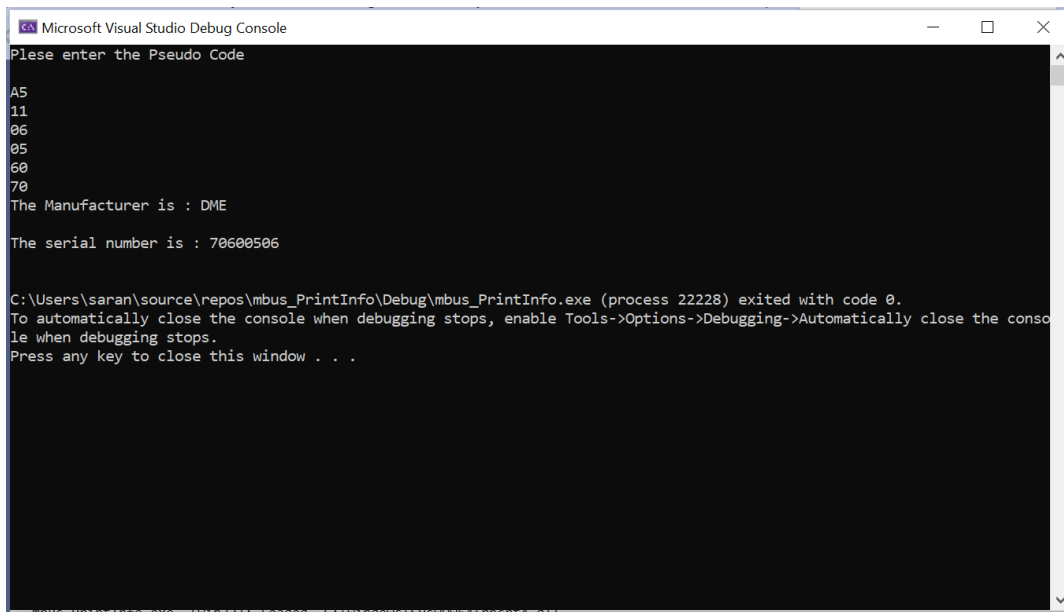


```
C:\Users\saran\source\repos\mbus_PrintInfo\Debug\mbus_PrintInfo.exe
Please enter the Pseudo Code
A5
11
```



```
C:\Users\saran\source\repos\mbus_PrintInfo\Debug\mbus_PrintInfo.exe
Please enter the Pseudo Code
A5
11
06
05
60
```

3) The Output in Human Readable format is obtained as shown below:

A screenshot of the Microsoft Visual Studio Debug Console window. The window has a title bar with the text "Microsoft Visual Studio Debug Console" and standard minimize, maximize, and close buttons. The console area is black with white text. The text displayed is as follows:

```
Plese enter the Pseudo Code  
  
A5  
11  
06  
05  
60  
70  
The Manufacturer is : DME  
The serial number is : 70600506  
  
C:\Users\saran\source\repos\mbus_PrintInfo\Debug\mbus_PrintInfo.exe (process 22228) exited with code 0.  
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.  
Press any key to close this window . . .
```

4) The program will print out the manufacturer name and serial number for any valid hexadecimal data given by the user as shown in the above example.